there in association with the worked flints. The mandible of *Felis spelæa* found in the cave of Herm presents characters intermediate between the lion and the tiger, and M. Boule would prefer to look upon this great cave cat as merely a polymorphous race of the modern lion; he suggests that it should be called *Felis leo*, race *spelæa*.—M. Salomon Reinach treats of sculpture in Europe prior to Greco-Roman influence; and M. G. Capus describes the ethnical migrations in Central Asia from a geographical point of view. From the Himalaya, southwards, to the Altai, northwards, the great mountain ranges of Central Asia form a series of practically parallel ridges running from east to west; but from the 35th to the 45th parallels of latitude there is also a mountainous barrier extending from north to south, and separating the western plains from the valleys and plateaus of the east. This barrier has played an important part in determining the course of the migration of nations and the distribution of the two great Asiatic races. It is formed more particularly by the Pamir plateau, extending from the valley of the upper Indus as far as the Thian-Shan, to the north of the Trans-Alai range. The whole of the surrounding region is thus divided into three great sections—the Indo-Afghan, the Turanian (including Kashgar), and the Tibetan, and each of these three districts is characterised by certain physical features which distinguish it from the others. The Turanian slopes, with their grassy steppes and their arid deserts, possess a climate, a fauna, and a flora of great uniformity; the absence of great forests, the predominance of pasturage over arable land, the rarity of summer rains, and the great variations of temperature, clearly distinguish this section from the other two. On the high Tibetan plateaus which extend from the Kuen-lun to the Himalayas, the climatic conditions caused by the great altitude are, in general, so unfavourable to human life that they serve by themselves sufficiently to characterise this region. The plateaus and valleys of Afghanistan and the northern plains of India enjoy, on the other hand, a soil less unequal in richness, a climate less extreme, and a vegetation more abundant, thanks to the moisture that they receive from the south-west monsoons. The cultivation of the soil is more extensive, and is, at the same time, carried on with greater energy, so that arable land is less localised, and is in greater proportion to pasturage. But the aptitude of the soil to support nomadic cattle-breeders or sedentary agriculturists is an efficient factor in determining the routes chosen by the one and the other in their movements of migration or exodus; and so we find that the sedentary Aryan who has trusted to agricultural pursuits from time immemorial has moved from the west to the south-east and the east; while the Turco-Mongol, who has devoted himself to the raising of cattle and nomadism, has chosen the Turanian route from the east to the north-west and west.—M. R. Verneau describes a new human cranium from a lacustrine city. This is one of two crania found at Concise, by Dr. Gilbert, with some 1700 objects of bronze and stone, and is confidently attributed to the bronze age; it is almost perfect with the exception of the lower jaw, and is remarkable for its extreme brachycephaly (91·46).

The number of the *Nuovo Giornale Botanico Italiano* for April, and Nos. 2–4 of the *Bullettino* of the Italian Botanical Society, are almost entirely occupied with papers of special interest to Italian botanists, with whom the study of the galls produced on plants by insects occupies a large share of attention.

SOCIETIES AND ACADEMIES.

London.

Royal Microscopical Society, March 21.—A. D. Michael, President, in the chair.—Mr. C. L. Curties exhibited and described a new form of photo-micrographic camera and drawing apparatus, designed by Prof. Edinger, and constructed by Herr E. Leitz.—Dr. W. H. Dallinger exhibited and described a new model microscope by Messrs. Swift.—Messrs. Watson and Sons exhibited a new super-stage plate fitted with two steel springs; they also showed a Ramsden screw micrometer and an Abbe camera lucida, both made in aluminium.—Mr. R. T. Lewis described a scale insect from Natal, which he believed to be *Trioza pellucida*.—Mr. J. G. Grenfell exhibited and described specimens of Dicyemida, parasites found on the renal organs of cephalopods.—The President read a paper entitled "Notes on the Uropodinæ," a sub-family of the Gamasidæ, one of the higher families of Acari. The classification was first considered, that by former authors was reviewed, and a new classification proposed suitable to the present state of knowledge on the subject. Two new genera were established: one, *Glyphopsis*, for species with the body of irregular form sculptured on the dorsal surface, and with excavations for the legs on the ventral surface, which the author claimed as forming a natural group; the other, *Trachetes*, to replace *Celæno*, which name has failed by the operation of the law of priorities and for other reasons. Three new species were described, two from Cornwall and one from the Tyrol. One of the former, *Glyphopsis Bostocki*, is the largest and handsomest of known Uropodinæ; the Tyrolese species, *Uropoda hamulifera*, is also a remarkable creature. A list of the British species, which has not been attempted before, was then given, and the synonomy, which has fallen into great confusion, elucidated. The author then treated of the anatomy of *Glyphopsis formicariæ*, a curious species found some years since by Sir John Lubbock in the nests of the ant *Sasius flavus*, and lately found by Mr. Michael in considerable numbers in Cornwall, in similar nests. This anatomy varies a good deal from that of other Uropodinæ previously investigated. The alimentary canal is more of the type of other Gamasidæ than of the Uropodinæ, the ventriculus being small and its cæca long. The male genital organs also present special features; but the most remarkable novelties consist in a number of branched "racemose glands" of various sizes underlying the dorsal cuticle in fixed situations, and probably functioning as dermal glands; the coxal gland, which is attached to the second leg on each side, is also noticeable specially for the extremely large size and fleshy nature of its duct. It is probably the most striking coxal gland yet found in the Acarina.

Victoria Institute, March 19.—Sir G. G. Stokes, Bart., F.R.S., President, in the chair.—On a possible cause for the origin of the tradition of the flood, by Dr. Prestwich, F.R.S. The paper described at considerable length the various phenomena which came under the author's observation during long years of geological research throughout Europe and the coasts of the Mediterranean. He concluded by giving the reasons why he considered that these were "only explicable upon the hypothesis of a widespread and short submergence of continental dimensions, followed by early re-elevation, and this hypothesis satisfied all the important conditions of the problem." The age of man was held to be divided into Palæolithic and Neolithic, and he considered rightly so. He concluded by saying that thus there seemed cause for the origin of that widespread tradition of a flood. The paper was followed by reference to a communication from Sir W. Dawson, F.R.S., who welcomed the paper as confirming his conclusion, come to on geological and palæontological grounds, as to a physical break in the anthropic age. The evidence for this was afforded by the cave remains and from a vast quantity of other sources. The discussion which ensued was joined in by a considerable number, including Dr. Woodward, F.R.S., Prof. T. R. Jones, F.R.S., T. McK. Hughes, F.R.S., E. Hull, F.R.S., and Sir H. Howorth, F.R.S.

Zoological Society, April 3.—Sir W. H. Flower, K.C.B., F.R.S., President, in the chair.—The Secretary read a report on the additions that had been made to the Society's menagerie during the month of March 1894.—Dr. Günther exhibited and made remarks on some specimens of the American Lepidosiren (*Lepidosiren paradoxa*) from the Upper Rio Paraguay, collected by Dr. Bohls.—Captain H. G. C. Swayne, R.E., gave a description of the physical features of Somaliland, and an account of the expeditions he had made into the interior of that country during the past nine years, pointing out the localities in which the larger mammals were usually met with. The paper was illustrated by the exhibition of a large series of well-mounted heads of the various species of antelopes and other animals of Somaliland.—Mr. O. Thomas read a paper on the dwarf antelopes of the genus *Madoqua*, in which three species from Somaliland were described as new, and named *M. swaynei*, *M. phillipsi*, and *M. guentheri*. A revised classification of the six known species of this genus of antelopes was added.—Mr. R. T. Coryndon gave an account of his pursuit of the white or Burchell's rhinoceros (*Rhinoceros simus*) in Mashonaland, and of the way he had obtained the specimens which would shortly be placed in the British Museum, the Tring Museum, and the Cambridge University Museum (see p. 584).—A communication was read from Miss E. M. Sharpe containing a list of the butterflies collected by Captain J. W. Pringle, R.E., while on the march through British East Africa from Teita to Uganda. A new *Papilio* was proposed to be called *P. pringlei*, and a new genus and species of Satyridæ was named *Raphiceropsis pringlei*. Altogether examples of 134 species were obtained.

Linnean Society, April 5.—Mr. F. Crisp, Vice-President, in the chair.—Sir Joseph Hooker, K.C.S.I., exhibited a portrait, in oils, of Sir Samuel Bentham, Kt., a colonel in the service of the Empress of Russia, painted at St. Petersburg in 1784. He was father of George Bentham, the distinguished botanist, and former president of this society, 1861–74 (*Proc. Linn. Soc.*, 1886, pp. 90–104).—Dr. B. Shillitoe, exhibited some specimens of a primrose having abnormal leaf-like bracts immediately below the true calyx, and found growing with ordinary flowers of the same species.—An exhibition of some Trap-door spiders and nests, by Mr. F. Enoch, was deferred to a subsequent meeting.—Mr. R. H. Burne read a paper on the aortic-arch system of *Saccobranchus*, in which he elucidated the method by which respiration is effected in certain fishes which in tropical countries, but more especially in India, have acquired the power of living for a longer or shorter time out of water. Referring particularly to a paper by the late Surgeon-Major Francis Day, on amphibious and migratory fishes of Asia (*Journ. Linn. Soc. Zool.* vol. xiii. p. 198), he detailed the results of some recent investigations he had made, and were characterised by Prof. Humes as original and valuable.—The Secretary read a paper by Mr. H. N. Ridley, on the *Orchideæ* and *Apostasiaceæ* of the Malay Peninsula from the Kedah State (long. 99·30 to 104·30 lat. 7 N.) to Singapore, including the islands adjacent to the west coast, and those on the east coast of Johore, with the addition of a few from Southern Siam on the borders of the Malay Peninsula, the entire area comprising about 50,000 square miles. Mr. C. B. Clarke, who criticised the paper, commented upon the important additions made to the existing knowledge of the *Orchideæ* of this region, of which so large a portion was even yet botanically unknown.

PARIS.

Academy of Sciences, April 9.—M. Lœwy in the chair.—On the unoccupied spaces in the zone of small planets, by M. O. Callandreau. An investigation into the character of the stability of motion of small planetary bodies as affected by the commensurability of their periods of revolution with the period of revolution of Jupiter. The regions of instability correspond with the regions unoccupied by asteroids.—On the spectrum of oxygen at high temperatures, by M. J. Jansen. A description of the method employed for studying the spectrum of oxygen under pressure, the source of heat being a platinum spiral electrically heated. Results are to be published in a further paper.—On differential equations containing an arbitrary parameter, by M. Émile Picard.—On some copper objects belonging to ancient Egypt, by M. Berthelot.—On the slow alteration of copper objects when buried in earth and in museums, by M. Berthelot.—On a new octopus of Lower California inhabiting the shells of bivalve Mollusca, by MM. Ed. Perrier and A. T. de Rochebrune.—On the signification of hermaphrodism in relation to the differentiation of plants, by M. Ad. Chatin.—Note by M. Edmond Perrier accompanying the presentation of a work on the "Histoire des Étoiles de mer."—Report of the section of geography and navigation on the disasters of the Iceland fishery, by M. Guyou.—New parabolic elements of the comet Denning, by M. L. Schulhof.—Observations of the comet Denning (March 26, 1894) made at Algiers Observatory, by MM. Trépied and Renaux.—Observations on the comet Denning (March 26, 1894) made at Toulouse Observatory, by MM. E. Cosserat and F. Rossard.—Observations of the planet AX and of the comet Denning (March 26, 1894) made at Lyons Observatory, by M. G. Le Cadet.—Occultation of Spica Virginis, observed at Lyons Observatory, by MM. G. Le Cadet and J. Guillaume.—On the *rapport conique et la relation conique*, by M. Mozat.—On reflection of electrical waves at the end of a conducting thread terminating in a plate, by MM. Ed. Sarasin and Kr. Birkeland.—Magnetic properties of iron at various temperatures, by M. P. Curie. The deduction is drawn, from data given, that at high temperatures iron commences to be magnetised with an enormous initial coefficient, but this almost immediately suddenly changes in the direction of the curve $I = f(H)$, the field and the intensity of magnetisation being yet very feeble; the curve afterwards presents itself as a right line much less inclined and appearing to pass through the origin.—On the fusibility of mixtures of salts, by M. H. Le Chatelier. The mixtures (*a*) potassium and lithium carbonates and (*b*) sodium borate and sodium pyrophosphate have been studied in all proportions. The fusibility curves indicate, for (*a*) a very definite combination in equivalent proportions; for (*b*) a combination not so distinctly marked.—On the combinations of molybdenum dioxide and disulphide with alkaline cyanides, by M. E. Péchard.—On the use of polishing in the study of the structure of metals, by M. Osmond.—Action of halogens on homopyrocatechol, by M. H. Cousin. Chlorine has given (1) trichloro-homopyrocatechol, (2) the ortho quinone of (1), (3) more highly chlorinated substances now being examined. Bromine has yielded similar derivatives. Iodine does not seem to yield iodo-derivatives.—On a new earthworm of the family of the Phreoryctidæ (*Phreoryctes endeka*, Gd.), by M. Alfred Giard.—On the nerves of the antennæ and the chordotonal organs among the ants, by M. Charles Janet.—On the reviviscence of the Tardigrades, by M. Denis Lance.—The course of resin canals in the cauline parts of the silver fir (*Abies pectinata*, D. C.), by M. J. Godfrin.—On a siderolithic bed of mammals of the Middle Eocene, at Lissieu, near Lyons, by M. Ch. Depéret.—Discovery of fossil remains of the striped hyæna in the grotto of Montsaunés (Haute-Garonne), by M. Édouard Harlé.—On the glyptic race, by M. Edouard Piette.—On the "*cassage*" of wines, by M. A. Bouffard.—Squalls and storms, by M. Durand-Gréville.

BERLIN.

Physical Society, February 16.—Prof. von Helmholtz, President, in the chair.—Prof. Planck delivered an address in memory of Heinrich Hertz, in which he drew, in warmly appreciative words, a clear picture of the development of the career, character, and work of the distinguished savant so early removed from science.

March 2.—Prof. du Bois-Reymond, President, in the chair.—Dr. Roepsel had previously described an apparatus for the relative measurement of the magnetic properties of different kinds of iron suitable for technical purposes. This was composed of two coils of wire in which the needles to be compared were so placed that the north pole of the one lay immediately opposite to the south pole of the other. In the magnetic field so produced was placed a flat wire coil connected with a torsion needle, and by means of this the strength of the magnetic fields was measured. Dr. Roepsel now described a new apparatus for obtaining absolute measurements which depended upon the yoke method. After a short discussion of the principle of this method, he described the experiments which had finally led to the introduction of that instrument for technical purposes. It consists of a half-yoke which is pierced through in the middle by two semicircular holes 1 mm. broad; the iron bar goes through the two limbs of the yoke, inside of which the magnetising coil lies. The small coil which measures the magnetisation of the bar passes through the small hole in the yoke, and carries a pointer by means of which its deflection can be measured. Dr. du Bois spoke concerning the need for very intense magnetic fields in the experimental examination of certain still unsolved problems of physics, and described minutely ring electromagnets, already mentioned and examined in detail by him, which were made in the works of Siemens and Hulske, and which, under the application of currents accessible in the laboratory, gave between conical poles of 60° a strength of field of 38,000 c.g.s.

March 16.—Prof. du Bois Reymond, President, in the chair.—Prof. Börnstein reported on electric measurements which he had made in the previous year during two balloon ascents on August 18 and September 23. At the first ascent he had, on the ground of previous statements, expected that the fall of potential would increase with the height. The measurements were made with two polished aluminium points—these were soon of no use—and also with a water-collector consisting of a funnel, which acted well. The result was that the fall of potential decreased with the height, and at 3000 m. no conduction to the electroscope occurred. The supposition that the measuring apparatus was in disorder was shown to be wrong, for in a lower air current, under 1900 m., electricity was again shown. At the second ascent observation was made with a collector in a metal funnel, and here also a diminution of the fall of potential was found at greater heights. Two subsequent balloon ascents, which were carried out in Paris, and a third carried out in Berlin in the previous month, have given similar results. The views hitherto held concerning atmospheric electricity, and which originate from Exner, therefore need modification; at any rate, the view that the aqueous vapour produces negative electricity at the higher levels can no longer be held to be correct. What part it plays can only be determined by further electrical measurements from balloons.—Prof. von Bezold explained how the condition of the atmospheric electricity could be represented in the simplest and most diagrammatic manner by the aid of the graphic method.—Dr. Gross described new experiments on the electrolysis of sulphates in alkaline solutions, as, for instance, silver sulphate and silver oxide in ammonia solution, which led again to results from which he believed a dissociation of sulphur might be inferred.

Physiological Society, February 23.—Prof. du Bois-Reymond, President, in the chair.—Prof. H. Munk spoke concerning Prof. Golz's lately published research on a dog which had survived for a long time extirpation of the cerebrum, and on whose behaviour evidence against the localisation of sense perceptions in defined regions of the cerebral cortex were founded. Prof. Munk, in the discussion which followed, explained that all the phenomena which can be referred to the presence of visual, auditory, olfactory, and gustatory perceptions in a dog which has been deprived of its cerebrum, were simple reflex phenomena which are awakened through general sensation without the participation of a sense perception. Dr. Ullmann described experiments which led him to the view that the red blood corpuscles are not biconcave discs, but are biconvex bodies.

Meteorological Society, March 6.—Prof. Hellmann, President, in the chair.—Dr. Schubert reported on the results of his further observations of the temperature and humidity in woods and in the open. The observations were taken last year at the same time, and were made at least twice daily, three hours after noon and at sunrise, by means of an aspiration hygrometer. On each occasion nine single measurements were taken in three groups, which were separated from one another by a quarter of an hour, while in the groups the single observations followed at intervals of one minute. The mean of twenty-six days' observations showed that in the morning the temperature in the woods was 0·08° higher than outside them, while after midday the temperature in the open air was 0·3° higher than in the woods. The humidity, both absolutely and relatively, was greater in the open than in the woods both in the morning and in the afternoon; the difference was similar to the temperature difference, only smaller. Measurements in the tent gave similar but greater differences than those made with the aspiration hygometer. Prof. Sprung spoke concerning the diurnal range in velocity and direction of the wind on the Eiffel Tower. From the Espy-Köppen explanation of the daily variation of wind velocity at the plain and summit stations, Prof. Sprung has derived an explanation for the opposed direction of the wind at the lower and at the higher levels; he has pointed out that from the presence of ascending currents about midday it follows that, at the lower level the wind must change direction with the hands of a watch, while at the higher station it must change against the hands. As, however, the wind observations at the summit stations are not free from the friction of the surface of the earth, Prof. Sprung has examined the reports of the wind observations on the Eiffel Tower, and has found here also a decrease of the wind velocity during the day, and an increase during the night, as was found on the summit station. The minimum wind velocity occurs, however, in summer as early as 9 a.m., while in winter it occurs first at 1, and in spring and autumn between 10 and 11. The wind direction, as on the summit stations, shows a maximum of turning with the watch before noon, and a maximum of turning against the watch after noon, the changes occurring also earliest in summer and latest in winter, but the changes of direction show themselves about three hours after the minimum velocity. The wind observations on the Eiffel Tower, therefore, confirm the Espy-Köppen explanation, and show that the influence of rising air-currents is already sensible at these moderate heights.

Göttingen.

Royal Society of Sciences.—The *Nachrichten* is now issued in distinct series, dealing respectively with literary, biological, and mathematico-physical memoirs. The first number of the *Mathematisch-physikalische Klasse* contains the following papers:—

January 13, 1894.—Ed. Riecke: A contribution to the theory of swelling by imbibition (*Quellung*).

February 3.—Prof. O. Henrici: On a new harmonic analyser.—W. Voigt: On an apparently necessary extension of the theory of elasticity (continued).—C. Brodmann: Some observations on the rigidity of glass rods.—O. Wallach: On the behaviour of the oximes of cyclic ketones (II.).

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Books.—Transactions of the Sanitary Institute, Vol. xiv. (Stanford).—Machines Frigorifiques a Gaz Liquéfiables: R. E. de Marchena (Paris, Gauthier-Villars).—A Treatise of Natal Astrology: G. Wilde and J. Dodson (Halifax, Occult Book Company).—Attempt at a Catalogue of the Library of the late Prince Louis-Lucien Bonaparte: V. Collins (Sotheran).—Tell el Amarna: W. M. F. Petrie (Methuen).—Man's Place in Nature, and other Anthropological Essays: T. H. Huxley (Macmillan).—Nature's Hygiene: C. T. Kingzett, 4th edition (Baillière).—Recherches sur l'Histoire de l'Astronomie Ancienne: P. Tannery (Paris, Gauthier-Villars).—Smithsonian Institution Report to July 1892 (Washington).

Pamphlets.—Recherches Geologiques sur les Environs de Vichy (Allier): G. F. Dollfus (Paris).—Report of the Board of Managers of the Department of Archæolology and Palæontology of the University of Pennsylvania, 1893 (Philadelphia).—Die Temperatur-Verhältnisse des Bodensees: Dr. F. A. Forel (Lindau i. B.).—Die Schwankungen des Bodensees: Dr. F. A. Forel (Lindau i. B.).—Transparenz und Farbe des Bodensees: Dr. F. A. Forel (Lindau i. B.).—La Lava Incandescente: A. Ricco (Roma).

Serials.—Journal of the Sanitary Institute, April (Stanford).—Journal of the Chemical Society, April (Gurney and Jackson).—Record of Technical and Secondary Education, April (Macmillan).—American Journal of Science, April (New Haven).—American Naturalist, April (Philadelphia). Annalen der K.K. Universitäts-Sternwarte in Wien, viii. and ix. Band (Wien).—The Asclepiad, No. 40, Vol. x. (Longmans).—Mind, April (Williams and Norgate).—Transactions and Proceedings of the Botanical Society of Edinburgh, pp. 233-636 (Edinburgh).—Journal of the Franklin Institute, April (Philadelphia).—Zoologischer Anzeiger, xvi. Jahrg. 1893, Litt. 2 (Leipzig).—American Meteorological Journal, April (Ginn).—Astronomy and Astro-Physics, April (Wesley).—Contributions from the U.S. National Herbarium, Vol. iv. Botany of the Death Valley Expedition (Washington).—Proceedings of the Aristotelian Society, Vol. 2, No. 3, Part 1 (Williams and Norgate).

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